

## Claims

- [1] A method for producing a cellulose fiber comprising the steps of:  
(A) preparing an N-methylmorpholine-N-oxide solution by dissolving a cellulose powder in concentrated liquid-state N-methylmorpholine-N-oxide (NMMO) to a small amount of 0.01 to 5% by weight;  
(B) introducing the N-methylmorpholine-N-oxide solution having a small amount of the cellulose powder dissolved and cellulose powder into a kneader, mixing, swelling and partially dissolving the cellulose in the kneader without reducing the pressure to produce a paste, and then feeding the paste to an extruder to obtain a homogenized cellulose solution;  
(C) spinning the cellulose solution by extrusion through a spinning nozzle, and then solidifying the spun cellulose solution which has reached a solidifying bath through an air bed to obtain a multi-filament; and  
(D) washing, drying, oil-treating and winding the obtained multi-filament.
- [2] The method for producing a cellulose fiber according to claim 1, wherein the liquid-state N-methylmorpholine-N-oxide having a small amount of cellulose dissolved is maintained at a temperature of 50°C to 95°C in the step (A).
- [3] The method for producing a cellulose fiber according to claim 1, wherein the kneader into which the N-methylmorpholine-N-oxide solution having a small amount of cellulose dissolved are introduced is maintained at 50°C to 95°C in the step (B).
- [4] The method for producing a cellulose fiber according to claim 1, wherein the final cellulose solution prepared by dissolution in the extruder in the step (B) contains cellulose at a concentration of 5 to 20% by weight with respect to the total weight of the solution.
- [5] The method for producing a cellulose fiber according to claim 1, wherein the N-methylmorpholine-N-oxide solution at the step (A) contains moisture in an amount of 10 to 18% by weight with respect to the total weight of the solution.
- [6] The method for producing a cellulose fiber according to claim 1, wherein the liquid-state N-methylmorpholine-N-oxide having a small amount of cellulose dissolved is supplied to the kneader while being maintained at a temperature of 50°C to 95°C in the step (B).
- [7] The method for producing a cellulose fiber according to claim 1, wherein the cellulose powder at the step (A) or step (B) is mixed with other polymer materials.